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村山和義

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Abstract

To examine the pathology of salivary glands that have undergone atrophy or hypofunction due to old age or disease, the duct ligation model is used. This model has been used in studies on the course of glandular parenchyma atrophy and the potential for repair and regeneration. However, the period of ligation was short in most of these studies, and none have examined long-term progress. Therefore, we investigated long-term ligation of the submandibular gland in mice and examined the chronic changes in atrophied salivary glands.

The ligation periods were 1, 2 and 3 months, and atrophied salivary glands were resected after each period. Resected glands were examined by histology, immunohistochemistry, RT-PCR, and transmission electron microscopy. Histologically, disappearance of acinar cells and increases in duct-like structures were observed over time in atrophied salivary glands, resulting from long-term submandibular gland main excretory duct ligation. Acinar cell markers (α-amylase, aquaporin 5) showed marked weakness in expression after ligation, but expression was still observed after 3 months of ligation. Stem cell markers (c-kit, Sca-1) showed greater expression at 1 month of ligation, compared with controls, but expression subsequently decreased with time. Expression of the precursor cell marker cytokeratin 5 was retained throughout long-term ligation.

Atrophied salivary gland tissue resulting from long-term ligation showed increases in specific duct-like structures over time, and the expression of stem cell markers and progenitor cell markers in the area of these structures suggests that the repair capability remained intact.

Keywords: duct-like structure・duct ligation・c-kit・Sca-1・cytokeratin 5